

**DMC DIGITAL OUTPUT**

**3100 - DO SERIES A**

**DESCRIPTION**

The 3100-DO (DO86-16) provides 16 opto-isolated digital outputs, rated for 24V@150mA (max). Each output stage has an LED to monitor the output signal and any possible overload condition. (Figure 1). The board occupies two consecutive device addresses, which are set via a microswitch. The 16 output channels are current sourcing switches with continuous output current up to 150mA. Each output contains current limiting and thermal protection circuits. The total current of all outputs must be less than 1 amp. All outputs of the 3100-DO use the same process voltage source (32V maximum).

**SELECTIONS**

- Device Starting Address (K1), Overload reset
- Occupies 2 consecutive addresses
- Device Type Code = 02H

**SPECIFICATIONS**

Location:	CPU or I/O rack
Power Requirements:	5V @ 0.3A
Environment:	Temperature: 0 to 50°C Humidity: 5 to 95%

**INDICATORS**

- Red Output status LED's
- Yellow Output Overload LED's

**CONNECTIONS AND ASSOCIATED PRODUCTS**

3130-DIO Terminal Block

**ASSOCIATED FUNCTIONAL BLOCKS**

DO1, DO8

## Status Indicators & Resets

There are two LEDs for each output stage. The LEDs indicate the state of the output stage. The red LED on the right is lit when the state of the output stage corresponds to logic "1" (the output stage sources current). The yellow LED on the left is lit when the output stage is in operating order; in an overload condition the LED is off.

The single (red) LED "ALM", when lit, indicates that at least one overload protection has tripped, corresponding to the alarm bit value "1" of the status word to be read. The LED "ALM" is extinguished when the alarms are reset.

Figure 1 shows the layout of the LEDs and the overload reset switch on the front panel of the 3100-DO board.

When the overload protection of any output has tripped, that output is not reconnected until the fault is repaired and reset manually with the reset switch (SW1) located on the front panel. SW1 resets all output faults on that board.

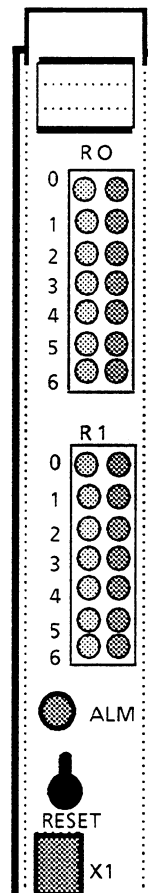


Figure 1. LEDs and Reset Switch Location

The ALM lights if one or more output overloads are tripped. Two normally open (off) collector outputs are available on connector X1 to provide hardware interlocking in case of overload detection. The X1 outputs control the following:

- X1-1 - Process Voltage (Alarm Output 1 Return)
- X1-2 - Not Used
- X1-3 - Alarm Output Collector 1
- X1-4 - + Process Voltage
- X1-5 - Alarm Output Emitter 2
- X1-6 - Alarm Output Collector 2
- X1-7 thru 10 - Not Used

Alarm output 1 is connected to process voltage internally, while alarm output 2 is optically isolated.

### Device Start Address

The base device address is selected by dip switch K1. Two device addresses are reserved beginning at the base address. Switch K1 represents the base address in Binary.

Table 1 Switch K1 Settings

Switch #	8	7	6	5	4	3	2	1
Hex Weight	80	40	20	10	8	4	2	1
Signal Logic Level		Switch Label						
	1	=	OPEN,					
	0	=	ON					
	X	=	N/A					

**NOTE:** Do **NOT** use Device Address 00H or FCH, or Device Addresses reserved for other boards in the rack.

The assignment of Device Addresses relative to the base address is shown in Table 2.

Table 2 Device Address Assignment

OFFSET	CHANNEL	TYPE
0	Digital Outputs 0...7	02H
1	Digital Outputs 8..15	02H

Type code, 02H, can be read for both device addresses recognized by the board 3100-DO.

**Connection to Process**

The output signals are transmitted from connector X2 to the terminal strip board 3130-DIO via a 40-pole flat cable (Fig. 2).

From the terminal strip board, the signals can be routed to their destination. The terminal numbers and their signals are shown in Table 3.

The terminal strip board DI/DO-32CH accommodates 32 digital outputs (output from 2 boards). Figure 2 is a flow diagram for the signal traveling through the terminal strip board. Figure 2 shows one of the two identical terminal strip systems. The component symbols of the second system are in parentheses.

The terminal strip board has two connections like the one shown in Figure 2. The desired direction of the current flow is selected by means of switches S1 and S2, set to positions 1-3 and 2-4.

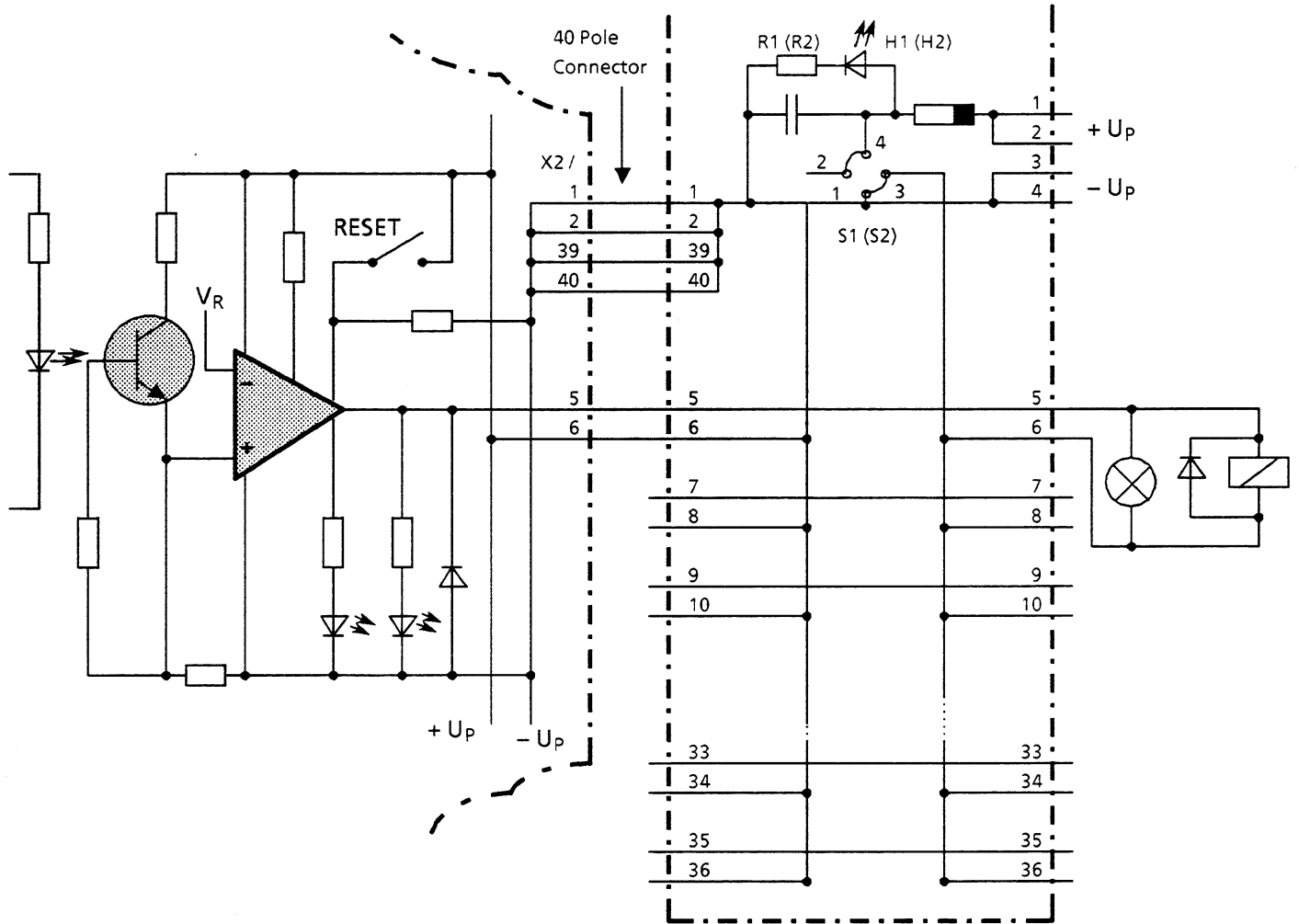


Figure 2. 3100-DO Board connection to the Terminal Strip Board

Table 3. Board 3100-DO Terminal Numbers and Signals (Connector X2)

PIN	CONNECTOR X2	PIN	CONNECTOR X2
1	- U <sub>p</sub>	21	DO10
2	- U <sub>p</sub>	22	+ U <sub>p</sub>
3	-	23	DO11
4	-	24	+ U <sub>p</sub>
5	DO00	25	DO12
6	+ U <sub>p</sub>	26	+ U <sub>p</sub>
7	DO01	27	DO13
8	+ U <sub>p</sub>	28	+ U <sub>p</sub>
9	DO02	29	DO14
10	+ U <sub>p</sub>	30	+ U <sub>p</sub>
11	DO03	31	DO15
12	+ U <sub>p</sub>	32	+ U <sub>p</sub>
13	DO04	33	DO16
14	+ U <sub>p</sub>	34	+ U <sub>p</sub>
15	DO05	35	DO17
16	+ U <sub>p</sub>	36	+ U <sub>p</sub>
17	DO06	37	-
18	+ U <sub>p</sub>	38	-
19	DO07	39	- U <sub>p</sub>
20	+ U <sub>p</sub>	40	- U <sub>p</sub>

The overload alarm signals are transmitted from Connector X1 as shown in table 4.

Table 4. 3100-DO Out put Signals ( Connector X1)

PIN	CONNECTOR X1
1	- U <sub>p</sub>
2	-
3	AT1
4	+ U <sub>p</sub>
5	AT2R
6	AT2
7	-
8	-
9	-
10	-